



Beyond Waste Issue Paper

A History of Waste Management

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A Brief History of Hazardous Waste Management in Washington State

Getting “Beyond Waste”

The Department of Ecology (Ecology) has embarked on a project to update the statewide solid and hazardous waste management plans. The aim of the Beyond Waste Project is to guide Washington in a new direction away from simply managing wastes and toward preventing wastes from being generated in the first place. The vision statement for Ecology’s Beyond Waste Project is, *“We can transition to a society that views waste as an inefficient use of resources and believes that many wastes can be eliminated. Eliminating wastes will contribute to social, economic, and environmental vitality.”*

This is one of eight issue papers prepared by Ecology staff to help in the development of strategic plans to move Washington in a new direction, a direction that will take us beyond waste.

Background and Context

Dramatic changes have occurred in hazardous-waste management over the last thirty years. When the first state hazardous-waste regulations were written in 1977, open burning dumps were the prevalent means of solid-waste disposal in rural Washington counties. More populous counties were using “sanitary landfills” where waste was buried, not burned, and received periodic soil-cover over waste. The need to provide impervious liners at solid-waste landfills to prevent leachate migration was not a requirement of the solid-waste regulations. Industrial waste, including what became classified as hazardous waste, was not restricted as to where it was disposed. Industrial waste was routinely disposed of in dumps at the sites where it was produced.

There was a nucleus of an industrial-waste-recycling industry that existed in western Washington which revolved around large companies. Western Processing is an example of a company engaged in that type of activity. Recycling businesses operated with as little regard for the environment as did the disposal facilities, and were later discovered to have created significant soil and groundwater contamination problems.

There was also some recognition that some dangerous industrial waste required special handling. An industrial-waste disposal site was developed at the Pasco Landfill in 1974 to dispose of industrial wastes collected by Chempro, an industrial-waste management company. This site received wastes until 1975, at which time it was closed due to air-

quality concerns raised by grape growers regarding herbicide-manufacturing residues being disposed there. This site subsequently became a federal Superfund site due to groundwater contamination from the landfill. The pesticide wastes mentioned above were excavated from the landfill in February and March 2002 and sent to a hazardous-waste incinerator in Utah.

The health and environmental hazards associated with these uncontrolled disposal practices were generally not widely recognized nor appreciated. The Washington State Legislature had the foresight to recognize and begin to address the growing threat posed by improper management of hazardous waste by passing the Hazardous Waste Management Act (HWMA), Chapter 70.105 RCW, in 1976. The Legislature had shown earlier leadership in the area of environmental protection by proposing a referendum to the voters that provided grant funds for solid-waste and wastewater treatment facilities. The voters approved these proposals.

Other factors leading to the resolve that the Legislature demonstrated in passing the HWMA were the recognition of national hazardous-waste management problems that were coming to light and the support of and encouragement by the large environmental movement in Washington State.

Law and Regulations

Hazardous Waste Management Act

The people of Washington State have long recognized the importance of environmentally sound solid- and hazardous-waste management. Washington had solid-waste laws in place in 1969 and the state's first hazardous-waste law, Chapter 70.105 Revised Code of Washington (RCW), the Hazardous Waste Management Act, was enacted in 1976. This 1976 law directed the Department of Ecology (Ecology) to develop rules implementing the requirements of the statute.

The law required Ecology to adopt regulations for designation of "Extremely Hazardous Waste." The law's definition of Extremely Hazardous Waste (EHW) included the concept of a category called "Dangerous Waste" of which EHW was a subset. EHW was to be set off from Dangerous Waste (DW) because of "persistence, bioconcentration or genetic effects, and extreme toxicity, or because such quantities present an extreme hazard to man or wildlife." The state was given responsibility for the regulation of EHW and local government was responsible for the regulation of DW. EHW was to be disposed of only at a site in eastern Washington owned by the State and operated by a contractor, or it was to be detoxified.

It should be noted that, in 1977, a section of land on the Hanford Reservation was acquired for this site but has not yet been developed. (Another requirement of note in RCW 70.105.100 was the direction to Ecology to establish a waste exchange for dangerous waste. Ecology formed an *Ad Hoc* committee that established an active waste exchange in the late 1970s, that lasted for nearly a decade.)

In 1983, the Legislature established Section 70.105.150 RCW, a preferred hierarchy for hazardous-waste management methods. In descending order the hierarchy is:

- waste reduction,
- waste recycling,
- physical, chemical, and biological treatment,
- incineration,
- solidification, and
- landfilling.

An attempt was made in 1993 to add energy recovery, which is included under recycling, as a separate category lower on the hierarchy, but that effort was not successful. This change would have aligned the language of the Hazardous Management Act with the Hazardous Waste Reduction Act which is discussed below. The hazardous-waste management hierarchy has been a fundamental driver for hazardous waste managed in Washington State and will continue to be so for the foreseeable future.

Given the complexity of the task and the need for general acceptance of the new rules, in 1976 Ecology brought together a 28-person *Ad Hoc* committee of diverse stakeholders to advise and assist in the development of the new regulation. This regulation, Chapter 173-302 Washington Administrative Code (WAC), Hazardous Waste Regulation, was promulgated in late 1977. Those familiar with the current regulation (218 pages in length) will appreciate knowing that the first regulation was only nine pages long!

The regulation provided specific criteria to use in designating waste as DW or EHW. This system, with some modifications, is still incorporated in the current rule. This approach to regulating toxic waste uses a “degree of hazard” evaluation of the environmental threat posed by specific chemicals and their concentrations to identify the health and environmental risks posed by that chemical waste and “differential” standards for EHW and DW that are used to manage the waste.

In 1976, federal legislation resulted in the promulgation of the Resource Conservation and Recovery Act (RCRA). The Environmental Protection Agency (EPA) adopted final hazardous-waste regulations in November 1980. The federal rules used a set of characteristics and a listing of chemicals and processes to identify the universe of wastes to be regulated as hazardous waste.

In 1980, Chapter 70.105 RCW, the Hazardous Waste Management Act was amended to give Ecology clear regulatory authority to regulate DW and EHW and to gain federal authorization for the state’s hazardous waste program from EPA. Although Washington’s system of identifying dangerous wastes results in a larger universe of regulated wastes than the federal approach, the federal regulations were much more comprehensive than those being implemented by Ecology in 1980.

In addition to generator requirements, the federal rules provided specific management standards for transporters, and operators of treatment, storage, and disposal (TSD) facilities. The state, through an agreement with EPA, used the federal law and its existing rule to ensure proper management of regulated wastes from 1980 until 1984.

In 1982, Ecology adopted a new set of rules that combined the state and federal systems into Chapter 173-303 WAC, *Dangerous Waste Regulations*. These rules continued to be more comprehensive than those used by EPA due to a broader definition of hazardous waste. Major additions to the federal rule occurred in 1984 and 1985 which included the incorporation of land-disposal restrictions, rules governing recycling activities, and requirements for corrective action at TSD facilities beyond their facility boundaries to protect human health and the environment. The amendment also required that financial assurance be extended to corrective action activities.

Chapter 173-303 WAC has been amended several times to incorporate new federal rules, correct errors, and make required changes. A major amendment was accomplished in 1995 that made the rule easier to understand and use. The current version of the regulations was last amended in June 2000 and is scheduled for another revision in 2003.

Hazardous Waste Reduction Act

In 1990, Chapter 70.95C RCW, the Hazardous Waste Reduction Act, was passed, authorizing Ecology's pollution prevention activities. It established state policies and goals that encourage the reduction of hazardous-substance use and hazardous-waste generation. The purpose of this law was to encourage individual generators to move their waste management practices up the hierarchy, away from landfilling. This was to be accomplished by identifying options and establishing implementation plans for reduction of hazardous-waste generation and hazardous-substance use. Toxics-reduction staff and hazardous-waste compliance staff were brought together in the Hazardous Waste and Toxics Reduction program as a result of reorganization in 1993. This reorganization has resulted in much closer coordination and integration of activities in those two groups.

In 1995, after the Pollution Prevention (P2) Planning program had been operating for about five years, Ecology initiated an evaluation of the program's effectiveness. The department contracted with Ross and Associates to survey a representative sample of the approximately 650 facilities required to plan. The purpose of the survey was to assess the value of the program to facilities, and based on those results, to recommend improvements. The study concluded that overall the planning program had promoted substantially more pollution prevention than if there had not been a planning requirement. The study also recommended that Ecology offer an alternative to P2 Planning based on the structural requirements of an environmental management

system (EMS). The EMS alternative was officially available to qualifying facilities beginning in 1998.

The State Hazardous Waste Management Plan

Chapter 70.105 RCW, the Hazardous Waste Management Act, was amended in 1985 to require that Ecology develop a State Hazardous Waste Management Plan. The first Washington State Hazardous Waste Management Plan was written in 1992 and last updated in 1994. Many things have changed in the hazardous-waste-management area since the last plan update. It was recognized that the significance of those changes made a major update of the plan a high priority.

Ecology's Hazardous Waste and Toxics Reduction Program is in the process of revising this plan to provide short- and long-term improvements in the management of both hazardous waste and toxic substances in Washington State.

The original *Washington State Hazardous Waste Plan* was published in January 1992 (Ecology Publication #92-05) and was the culmination of an intensive, inclusive process to provide a comprehensive document that met a legislative mandate to provide a guide for the management of hazardous waste in Washington State. A detailed history of the planning process is included in the 1992 plan and the reader is referred to that document.

The *Washington State Hazardous Waste Plan, 1994 Update* (Update) published in November 1994 (Ecology Publication No. 94-143) reviewed accomplishments, examined the status of uncompleted recommendations, and set the stage for program changes that occurred subsequent to that update.

When the Update was published, 40 out of 59 recommendations from the 1992 State Plan had been or were in the process of being implemented. Some examples of the major changes implemented in the program are highlighted below:

- Ecology instituted an annual report to the Legislature highlighting waste reduction resulting from P2 planning and other related activities.
- Toxics Reduction staff joined Compliance staff as a result of a reorganization in 1993 bringing together complementary skills in the Hazardous Waste and Toxics Reduction Program. This helped to improve the focus on P2 when dealing with hazardous substances and wastes, and it improved data sharing.
- Regulatory changes were implemented that made it easier to recycle and manage lower risk wastes. Revised Treatment by Generator rules and guidelines allowed generators more flexibility in managing wastes on-site.
- Ecology gained authorization from EPA to implement corrective-action activities using Washington State's Model Toxics Control Act regulations. Washington was the first state to gain this authorization using state cleanup rules. A variety of efficiencies were gained as a result.

- Changes in Annual Reporting procedures greatly improved data quality and waste-management information.

The Update discussed nine recommendations that were “in process” in 1994. The outcomes of these recommendations are summarized as follows:

- The Pacific Northwest Pollution Prevention Research Center was identified as a resource to provide independent review on hazardous waste demonstration and research projects that would move waste up the management hierarchy. The Center was not able to provide this service, and this need has been filled using resources available within Ecology. The recycling of spent potliner from the aluminum industry is an example of a waste stream intended to be addressed in this recommendation.
- The recommendation suggesting that the amount of time inspectors spend in the field should be increased was implemented as a result of streamlining and standardizing procedures and written reports. A team of compliance staff, using the Total Quality Management process, developed an effective model for increasing inspectors’ field time that is still in use today.
- The recommendation calling for more frequent inspections of TSD facilities and large generators was implemented as a result of the more efficient inspection procedures described above.
- A point system to rank the level of generator compliance was tried, but proved not to be very useful. An alternate “compliance indicator system” focusing on specific high priority violations found during an inspection was subsequently developed and is in use by the program today.
- The recommendation calling for more flexibility in inspection content was implemented through the “Hitting the High Points” Policy and through the more efficient inspection procedure mentioned above.
- The recommendation to increase contact with the regulated community was addressed through several projects. A “New Notifier” education program was established for generators just coming into the regulatory system. Sectors of the business community with similar activities were targeted for intensive technical visits. The first campaign, called “Shop Sweeps,” targeted the automobile service industry and was followed by a campaign called “Snap Shots” that targeted printers and photo processors. Hundreds of businesses were visited during these projects. An approach developed in the Central Regional Office that targets businesses in a geographic area for non-regulatory-compliance technical assistance called “Increased Generator Contact” visits has proven to be successful and has been adopted in all regions.
- The “Compliance Indicator” system mentioned above is providing useable metrics called for in the recommendation on the measurement of compliance.
- The recommendation regarding simplifying the regulations and making them easier to understand has been met by a major regulatory reform project and the

development of excellent guidance material for generators on the implementation of the regulations.

- A pilot project aimed at meeting the recommendation regarding better measurement of waste-reduction activities did not provide the desired information. Improvements in our Annual P2 Planning Performance Reports have helped meet this need to a certain degree, but measurement in this area is still challenging.

The Update discussed six recommendations that were “ongoing” in 1994.

Recommendations in this category were proposed as long-term policies with no endpoint or product. The status of these recommendations is summarized as follows:

- The “Close to Home” Policy was first embraced in the 1992 State Plan. The intent of the policy was to emphasize that it is safer and more equitable to manage hazardous waste as close as possible to its source of generation. This policy probably has less significance now than it did in 1992 because of the way waste generation and management has changed over time, the reduction in hazardous-waste management services currently available, and the distance that the services are away from “home.”
- Recommendations that hazardous waste be managed locally or on-site dovetail with the “Close to Home” Policy. There have been several regulatory changes that have promoted this and include allowing generators to more easily manage their waste on-site through more flexible Treatment by Generator (TBG) regulations, Permit by Rule (PBR) requirements and by allowing the disposal of low-toxicity dangerous waste in properly permitted in-state solid-waste landfills. These recommendations have probably been implemented as fully as they are going to be. Many generators have taken advantage of these changes and, since TBG and PBR wastes are not required to be quantitatively reported, some apparent waste reductions may be due to this circumstance.
- Recommendations regarding increased education of the regulated hazardous-waste community have been effectively implemented by Ecology. Pollution-prevention education and compliance technical assistance are routinely provided by regional field staff. Single industry campaigns such as “Shop Sweeps” for the auto service industry and “Snap Shots” for printers and photo processors, sector campaigns for specific groups like painting contractors and electronic manufacturers, and increased generator contact projects focusing on specific geographic areas are examples of direct contact projects that have been conducted. A project called Technical Resources for Engineering Efficiency (TREE) has been established for business education and technical assistance. TREE places Ecology staff in businesses for enough time to allow an in-depth evaluation of production processes with an eye to finding pollution prevention opportunities that reduce waste and save the company money.
- The Hazardous Waste and Toxics Reduction Program has developed an excellent set of guidance and educational materials to educate generators on regulatory requirements. The program’s quarterly publication, *Shoptalk*, is distributed to over

24,000 individuals and groups. The Internet is being used very effectively for the distribution of educational information through an easy to navigate and use homepage. Providing useful educational information to the regulated community is a high priority for the program.

- Hazardous-waste education in schools has seen a significant decrease since the last plan update. Budget constraints have made this a lower priority activity.
- Moderate Risk Waste educational activities are primarily being handled by local governments.

There were two 1994 Plan Update recommendations that were “awaiting implementation.” The status of those two recommendations is:

- A recommendation to require generators subject to P2Planning requirements to be required to implement their plans was not instituted.
- A recommendation to evaluate impacts of newly listed state-only regulated waste on the capacity of state and regional facilities was addressed by regulatory reforms and other changes in the program.

There were eight 1994 Plan Update recommendations that were “pending.” These recommendations were not scheduled for implementation in the near term or possibly even at all. A discussion of these recommendations follows:

- The possibility of the state operating hazardous-waste management facilities was never actively pursued after the purchase of Section 1 on the Hanford Reservation. However, recent consolidation and reduction in the number of commercial TSD facilities in Washington has kept alive the possibility of a public-private partnership. This would serve not only hazardous waste needs, but also other state-wide environmental management needs, such as tire management, sediment management and vector waste.
- Differential fees to provide inter-state equity for hazardous-waste management activities were never enacted. The current hazardous-waste management system has stabilized and there is no controversy over equity. This recommendation appears to no longer be applicable.
- The recommendation that EPA change the RCRA authorization process was not acted upon and does not appear to be applicable at this time. Note however, that EPA has developed some modifications to the authorization process, and Ecology staff has attended several conferences that EPA has held to work with all states on authorization issues.
- The recommendation to provide additional legal support through the Attorney General’s Office is no longer applicable. Although it is a recurring issue, Ecology legal needs regarding hazardous-waste management currently appear to be met.
- The need to implement a recommendation to monitor the Citizen/Proponent Negotiation process associated with siting new hazardous-waste facilities continues to be unnecessary.

- A recommendation to examine the timing of permit decisions no longer appears to be necessary.
- A recommendation to expand waste-specific research was never implemented.
- The updated State Hazardous Waste Management Plan will document implementation of recommendations from the 1992 State Plan.

State Plan Reports

There were three reports that were developed in support of the State Plan that provide valuable background and insight into the planning process. The reports are discussed below.

The *Do the Right Thing Study*, Ecology Publication 92-58, June 1992, provided a basis for estimating future waste-reduction potential to be used in the Needs Assessment for Washington. This report studied nine individual waste streams to identify current practices, to determine the best management for these wastes, to ascertain the potential for achieving this management, and to understand all the barriers to achievement.

The *Needs Assessment for Washington*, Ecology Publication 92-59, June 1992, examines past and future hazardous-waste management. Trends are used to project waste generation. Future demand for hazardous-waste storage is projected with an analysis of impacts of moderate-risk wastes, regulatory changes, cleanup wastes and out-of-state wastes. Capacity needs are examined under three possible scenarios.

An Evaluation of Atypical Hazardous Waste, Ecology Publication 92-60, June 1992, examines six atypical waste streams to determine how the state can best regulate these wastes. Atypical wastes were selected as those (which are both) already addressed by other federal and state programs and are state hazardous wastes.

Significant Changes

Ecology developed rules to implement the mandates of the Hazardous Waste Management Act, and these rules began to be implemented in 1978. The history of those rules is summarized earlier in this paper.

Washington was one of the first states to adopt rules addressing hazardous-waste management; however, no specific regional-office resources were dedicated to the implementation of the new rules. Ecology staff working with local governments on solid-waste issues assumed the additional significant responsibility of implementing the new hazardous-waste regulations. Early work included identifying the entities subject to the rule and learning how the rule should be applied. Duties also included limited attempts at educating those subject to the regulations and the public about the new requirements.

Ecology was responsible only for the regulation of Extremely Hazardous Waste (EHW) in this period, with local governments being responsible for regulating Dangerous Waste (DW). Ecology's limited resources did not allow for an in-depth educational effort for either local government implementers or those subject to the regulation. This resource-limited implementation of the state program continued until the federal hazardous-waste laws went into effect in November 1980.

The federal hazardous-waste laws brought a great deal more attention to the need for proper management of hazardous waste. Ecology and the EPA entered into a partnership that brought together more resources for implementation. Washington State has always been clear in communicating its desire to be a leader in hazardous-waste management and to have primacy for the implementation of hazardous-waste laws in the state.

The federal program essentially occluded the state program until the requirements of both programs were brought together in updated state regulations published in 1984. The nine pages of hazardous-waste rules contained in Chapter 173-302 WAC became over 100 pages in the newly revised and renumbered regulation, Chapter 173-303 WAC. There are currently 218 pages of regulations.

When the federal regulations were published, they were the most complex set of environmental rules that had ever been published and may still be so today. The slow phase-in of the hazardous-waste rules in Washington state accelerated dramatically with the advent of the federal rules. The federal program was better publicized, had specific deadlines for the regulated community to meet and had substantial penalties associated with violations – it had the attention of those who generated and managed hazardous waste.

Both the regulated and the regulators had a steep learning curve to deal with due to the complexity of the regulations, lack of experience in their implementation, and the lack of guidance and educational material on the new federal rules. No special efforts were made to educate the regulated community on the rules, primarily due to a lack of resources.

As the universe of those regulated by the new rules became known due to mandatory notification requirements contained in the federal rule, compliance inspections were initiated. Though the approach to regulation in the new rules relied on voluntary compliance, the EPA began implementation of the new regulatory program with a fairly aggressive adversarial approach. The state followed the federal lead for several years until it became apparent that a different approach incorporating education and technical assistance would be more effective.

The departure from the federal approach resulted in the system Washington state is using today. This system takes a holistic approach to dealing with those affected by the

regulations. It relies on providing useable and understandable educational information and guidance, on-site technical assistance for compliance and waste reduction issues, targeted visits that focus on specific business sectors or geographical areas, flexible inspection procedures and a strong enforcement program when such action is necessary.

The approach that Washington took has resulted in better compliance with the rules, reductions of hazardous waste generated, a better working relationship with the business community and a safer and healthier environment.

Generators and Treatment Storage and Disposal (TSD) Facilities

There has been a significant decrease in the amount of hazardous waste generated in Washington State. As a result, many generators have been able to drop out of the hazardous-waste regulatory system. There has also been a very dramatic reduction in the number of TSD facilities operating in Washington State – both commercial and captive (associated with a specific business).

The decrease in generators is associated with better waste management and waste-reduction practices, and may also be related to businesses being able to manage wastes on-site without being subject to reporting requirements. Trends in waste management are examined separately in much greater detail in other documents and will not be discussed in this paper.

The decrease in TSD facilities is due to a number of factors. Many facilities entered the system and discovered that they could manage their wastes within generator requirements without having to go through the onerous permitting process and subsequently closed. Reduced waste production and intense competition have driven others out of the market. Out-of-state competition may also be a factor. A great deal of consolidation has occurred in the hazardous-waste management field and many facilities have been absorbed into other companies and closed.

Capacity needs are examined in depth in other documents. Up until the late 1990's, it appears that current treatment and disposal options were serving the state well, and there did not seem to be a great need for additional capacity. It should also be noted that this decrease in hazardous-waste production occurred during a period of extremely high economic productivity, perhaps signaling that waste-reduction activities are being taken to heart.

Recent financial and environmental problems with existing TSD facilities are causing Ecology to seek additional means to ensure that wastes are managed properly and sufficient contingent financial mechanisms are maintained by facilities to adequately deal with closure and contamination issues. An example of a situation that reflects this problem was the shutdown of the CleanCare facility in Tacoma. This large TSD facility and used-oil processor experienced financial problems that led to poor waste

management practices, including illegal discharge of oil and hazardous waste to the environment. Penalties issued by Ecology resulted in the company going out of business.

Hazardous waste rules applied to only a small portion of the facilities because of recycling exemptions. Existing financial mechanisms intended to provide for required closure activities allowed the owner to gradually add to the trust fund, meant to cover closure of the hazardous-waste portion of the facility. Closure funds proved to be grossly inadequate to address both hazardous and “non-hazardous” closure of the defunct CleanCare facility.

State and federal funds have been used to stabilize immediate environmental problems at CleanCare. Generators who trusted the facility to safely manage their waste may be required to provide funding for the cleanup problems left at the site. Ecology is exploring a variety of ways to prevent such problems from occurring at the remaining commercial hazardous-waste handlers in the state.

There are no commercial hazardous-waste landfills or incinerators in Washington State. The closest commercial hazardous-waste landfill is located in Arlington, Oregon, and the nearest incinerator is in Utah. Commercial hazardous-waste management in Washington includes only treatment, storage, fuel-blending and consolidation for shipping to other locations.

TSD facilities in the state receive wastes from a variety of sources from both inside and outside of the country, and Washington is a major transportation hub for hazardous waste. Also, properly permitted solid-waste landfills in Washington are allowed to receive low-toxicity solid dangerous waste if the operating entities choose to do so (e.g., batteries and oil filters). Three landfills currently accept this waste.

Ecology has recently turned attention to hazardous-waste transportation and transfer activities. New regulations for transporters and transfer stations were adopted in June 2000, and emphasis has been placed on the inspection of these facilities. Ecology created a hazardous-waste-transportation coordinator position to ensure development of, and to maintain, expertise in this area.

There have been several attempts to site hazardous-waste disposal facilities in the state. In the mid 1970's, a proposal to convert an abandoned Titan missile site in Adams County into a dangerous-waste landfill died due to technical problems and local opposition. Another proposal in Adams County that would have included a landfill and incinerator met a similar fate due to financial problems and competition with another proposal in Grant County. The Grant County proposal for a landfill and incinerator was also abandoned due to fierce local opposition and the downturn in the need for such disposal capacity. In the early 1980's, there was also a proposal to develop a waste glassification facility in the Seattle area that failed to succeed as a

commercial operation. There have been no proposals to develop new commercial hazardous-waste disposal facilities for at least the last 10 years.

Permitting, Closure, and Corrective Action

When the federal rules went into effect in 1980, many entities entered the regulatory system as TSD facilities. Facilities initially entering the new hazardous-waste TSD facility management system were granted a paperless *interim status* permit that allowed them to operate until final permits were issued.

The new permitting requirements were onerous in the detail they required for final permitting. Many facilities never operated as TSD facilities and were able to administratively withdraw from the system. Of those that did operate as TSD facilities, many found ways to operate only as generators and went through closure under *interim status* requirements. A few facilities obtained final permits. The first permits issued in Washington were to a Spokane solvent recycler and to Washington State University in June 1984. These permits were issued for a 10-year term; neither of these first two permits was renewed. Ecology regional offices were initially responsible for permitting, but this function was later centralized at the Ecology Headquarters' Office.

Almost all facilities that chose to close found that they had created contamination and were required to go through a formal corrective-action process to address soil and groundwater problems they had created. The corrective action process was greatly facilitated when EPA allowed Ecology to use some of the processes available under the state's Model Toxics Control Act, used for contaminated sites not subject to hazardous-waste regulatory authority.

Ecology has issued 23 final hazardous waste facility permits. Thirteen are currently managing waste; eight of the facilities are commercial operations. Three new applications are currently under review. I would add the number of facilities that are still undergoing corrective action due to the complexity and significance of the contamination problem that they left behind. Significant growth in the numbers of commercial TSD facilities is not anticipated given current waste generation trends.

Environmental Gains

Tremendous gains have been made in environmental protection since the inception of the hazardous-waste regulatory program. Improvements in how solid waste is managed have also added to these gains. We have gone from a time when waste was routinely burned and hazardous wastes were disposed in unlined landfills into a period where high-risk wastes are managed according to their risk, and the disposal of solid waste is more carefully controlled. Some solid-waste landfills in Washington are now able to receive low-toxicity dangerous wastes because of improved environmental controls and monitoring now in place at those facilities.

Air quality has improved as a result of better hazardous-waste management practices. Emission sources from hazardous-waste management have been greatly reduced by imposing controls on what is burned and making sure containers holding wastes are properly closed. Efforts to use safer and more environmentally-friendly chemicals have also resulted in reduced emissions.

Water quality has also improved because of the controls on hazardous waste. Groundwater is better protected now due to the controls on hazardous waste storage, treatment and disposal and due to the requirement to provide leachate collection and groundwater monitoring at solid waste landfills. Groundwater quality is also benefiting from better management of dangerous waste at generation sites. In addition, untreated hazardous waste cannot be discharged to sewer systems or on-site wastewater disposal systems and the discharge of treated waste to sewer systems is also better controlled now.

Ecology has tried to take an integrated approach to hazardous waste management to ensure that actions to reduce or control the generation of waste do not result in those wastes being transferred to other environmental media.

Future environmental gains will be harder to attain. The obvious, egregious problems have been identified and addressed – the “low hanging fruit” has been picked. Past “drivers” for improved waste management, such as the specter of toxic chemicals oozing into our drinking water from uncontrolled dumps, are no longer news-makers. It appears that a stable hazardous-waste-management infrastructure is in place, and more generators understand the need for it and use it. The quantum leap made over the last thirty years to the current *status quo* will be difficult to duplicate.

Future drivers possibly include persistent, bioaccumulative and toxic chemicals, as well as endocrine-disrupting chemicals. Disposal and treatment of hazardous waste will be increasingly driven by life-cycle analyses for production, and by the use and management of newly-emerging chemicals. Biologically-threatening organisms may become an issue for hazardous-waste management, as chemically-hazardous wastes were in the 1970’s.

Opportunities for change and environmental improvement are less obvious and are harder for stakeholders to come to agreement on. Reducing the use of toxic chemicals, increasing appropriate recycling of hazardous waste, and encouraging more efficient processes that minimize or eliminate waste production are areas where we are currently focusing our activities and probably will do so for the near future. We have a vision of a sustainable future that includes the elimination of most wastes. We have some ideas for approaches to use in achieving this vision, but have not yet developed a practical strategy to take us there.

Then and Now

It is worthwhile to look back at the attitudes that existed when the regulations were first written and to look at what the current view appears to be on the part of primary stakeholders. A perception of past and present attitudes for some important constituents follows:

Citizens of Washington: The citizens of Washington are generally supportive of environmental protection, with stronger support evident in the western part of the state. People in Washington appreciate and value a clean, high-quality environment and have been active in proposing and supporting environmental initiatives.

The voting public has supported two referenda (26 & 39), presented for consideration by the Legislature, that provided grant funds for the improvement of solid-waste and wastewater treatment facilities. The public supported legislation addressing new requirements for improved hazardous-waste management. This support in the 1970's and 80's was, no doubt, fueled by a multitude of news stories that highlighted the mismanagement of toxic wastes across the country. The problems at Love Canal in New York and the "Valley of the Drums" in Tennessee are just two prominent examples that raised public concern regarding hazardous-waste management. Washingtonians also strongly supported the passage of initiative 97 that resulted in the passage of the state Superfund Act (MTCA) in 1988.

The problem of big, uncontrolled disposal sites has mostly been solved today, and the preventive system put in place by the new hazardous-waste regulations is working. Proper management of hazardous waste has become routine and is not held by the public as a large concern. Front-page newspaper headlines and lead television news stories regarding hazardous waste are rare today, but were common in the past. The past hazardous-waste management crisis has been averted, and overall the public at large does not seem to have concerns about the current system.

On a localized scale, however, environmental issues specific to a neighborhood or small area can still pique public involvement. For example, in Georgetown, a Seattle neighborhood, local residents pushed hard to get Philip Environmental to deal with soil and groundwater contamination resulting from hazardous waste management activities. This pressure was a factor in the facility closing down and expediting cleanup.

This and other focused efforts of the public show how public concern can still be a driving force for change. A fact that Ecology should consider when looking at ways to achieve the Beyond Waste vision. An educated and galvanized public could champion the changes Ecology is seeking.

As consumers, the public can also drive change by demanding products that are made with environmental protection and sustainable practices in mind. This demand for

“green” products has occurred on a limited basis, but in the absence of a crisis, it is unlikely that the general public will independently generate support for sustainable practices.

The Legislature: The Legislature reacts to the needs and concerns of the citizens. In the 1970’s there was generally a high-priority concern regarding environmental protection and, specifically, with the threat posed by the mismanagement of hazardous waste. This concern was acknowledged and acted upon through the passage of laws requiring better hazardous-waste management practices.

The big problems regarding hazardous-waste management have been resolved. Problem issues regarding hazardous-waste management do receive the attention of the Legislature, but, lacking a major crisis, it is not likely that any major initiative regarding sustainable practices will be forthcoming. Smaller incremental steps might be possible through legislators who are supportive of Ecology’s positions. (See discussion on the TSD facility initiative.)

The Business Community: In looking toward the future, there are some companies who currently recognize the value of implementing sustainable practices, however most do not. This is primarily due to the fact that businesses do not see that embracing those changes will improve their profits. Most businesses are unwilling to deviate from the way they do things unless there is a clear reason to do so, and that reason is generally related to whether money can be saved or more money can be made. Making changes can be costly and risky, and there must be a compelling reason to make the change.

Businesses that have incorporated sustainable practices into their business plans have done so for a variety of reasons. There is an increasing demand by consumers for companies to use environmentally sound practices and provide “green” products. There is some pressure from larger companies on those with whom they contract to use sustainable practices. The movement to international standardization to appeal to foreign markets (e.g., ISO 9000 & 14000 certification programs) seems to be driving the concept to a certain extent. Some forward-thinking managers have found that they can be profitable and successful as a result of adopting sustainable practices.

Making sure that the successes gained by the use of sustainable practices are well documented and advertised will help to change negative attitudes in the business community, but the conversion will likely be slow.

Environmental Advocacy Groups: Environmental groups were strong supporters of the development of laws and regulations mandating better management of hazardous waste. As waste management practices have improved over time, they are no longer as active. However, there is still a strong environmental movement active in the U.S. and Washington state. The focus of this movement has turned to issues that are felt to have higher priorities for the expenditure of limited time and money these groups have

available. Some issues related to hazardous-waste management have and continue to receive attention (e.g., persistent, bioaccumulative, toxic chemicals (PBTs), electronics recycling, toxics in fertilizers), but the high concern regarding the “routine” management of hazardous waste has dissipated. These groups, by their nature, are strong advocates for wise resource use and sustainable practices. The emergence of the Green Party during the 2000 Presidential race indicates that the environmental movement is still viable. It appears that these groups will be strong advocates for sustainability for the foreseeable future.

Recommendations on Preserving Our History

The discussion of the past 25 years of history has shown how events shaped the present, both regulatory and pollution prevention efforts. Various documents have been relied upon, and to a certain extent, the memories of those who lived through these earlier times. The question should now be posed about how the past will be constructed in another 25 years. That is, how can we take this opportunity to look into the future and try to make it easier for those who will follow, those who in 25 years will be looking back at the second 25 years of waste issues? How should this study address “the future of the past?”

Earlier cultures preserved their history in stone lasting millennia and others on paper lasting centuries. Electronic technology has changed so rapidly in recent years that our preservation time has shrunk to merely a decade. People now use CD drives- the 5 ¼ inch drives of scarcely 5 years ago are no longer available to many people for use in retrieving data that were stored on those discs. Also, how should we select from the huge volume of electronic information that is produced within the agency?

Specific Recommendations:

- Strengthen and enhance the use of the **Institutional History database** to preserve policy documents in a searchable database. This is a shorter term effort that those looking for precedents or who are revising policies have some background in what others have done in the recent past. However, it is critical that the gatekeepers of the system systematically encourage additions to the database and have sensible criteria for what does and does not get added to the system. Periodic updates and training sessions would seem to be one way to keep this current and usable.
- Clarify and ensure that all staff follow the proper **archival policies** for electronic files, especially when employees begin and end employment at Ecology.
- Ensure that an **Oral History Project** is performed that preserves the culture and themes of Ecology and that is updated every five years. Such an effort would help to “humanize” the past by putting names and personalities to the policies and issues that occupied their attention and energies.